

DIFFUSION BARRIER COATINGS, AND RELATED ARTICLES AND PROCESSES

Abstract of Disclosure

A barrier coating is disclosed, containing about 15 atom % to about 95 atom % chromium; and about 5 atom % to about 60 atom % of at least one of rhenium, tungsten, and ruthenium. Nickel, cobalt, iron, and aluminum may also be present. The barrier coating can be disposed between a metal substrate (e.g., a superalloy) and an oxidation-resistant coating, preventing the substantial diffusion of various elements at elevated service temperatures. A ceramic overcoat (e.g., based on zirconia) can be applied over the oxidation-resistant coating. Related methods for applying protective coatings to metal substrates are also described.